Notes on an Examination of four Species of Chitons, with Reference to Posterior Orifices. By William H. Dall.

1. *Stimpsoniella Emersonii.*

Two specimens.

The large and fine specimen from the Gulf of St. Lawrence presented a posterior and terminal anus of large size, but with the edges not elevated into a papilla. The head of an ordinary pin could be inserted into it without violence.

The orifices of the ovaries, bilaterally symmetrical, were situated just behind, and, as it were, under the shadow of, the last branchia on each side. There were two fenestræ on each side of the anterior, a little further towards the girdle and a little larger than the posterior.

This species resembles in most particulars the *Symmetrogephyrus Pallasii* of Middendorff; and it would seem that his ungainly subgeneric or generic name should be adopted. The hairs are precisely similar in both species, as are the branchiæ. The insertion-plates also agree, according to Dr. Carpenter, who examined a series from a specimen obtained by me in the Aleutian Islands. The principal differences, besides the larger size of *S. Pallasii*, are as follows:—In the latter the hairs are more closely set, the texture of the epidermis is thicker and harder, the points of the valves are more nearly covered, and the skin is smoothly rounded over the back, not showing any thing of the form of the valves as is the case in *S. Emersonii*. I think also the valves are smaller, in proportion to the size of the animal, in *Pallasii* than in *Emersonii*.

2. *Tonicella marmorea*, Fabr.

This species showed a clearly defined posterior and terminal vent. The fenestræ of the ovaries were symmetrical on each side; but the branchiæ pass behind them and conceal them. They are very small; and I could not detect more than one on each side, though fresh specimens, not hardened and contracted by alcohol, might show more.

3. *Trachydermon albus*, Linn.

The same remarks apply to this species. The vent was terminal, and on a papilla.

4. *Trachydermon ruber*, Linn.

Three specimens examined.

These specimens were much hardened by alcohol. Removing the plates from above and then the inner lining membrane, beneath the large and well-filled ovaries the intestinal canal is seen, terminating in the median line posteriorly. From the outside the anus was not perceptible in the smaller specimens. By carefully turning back the outer edge of the girdle in the largest specimen, after removing the posterior plates, but without touching the animal with the dissecting-knife, the anus was perceptible, with a pellet of fæces impacted in the opening. It is very small, exactly in the median line behind, and not on a papilla. It is also a little higher up than in the other species. The "cancellated space" noticed by Mr. Emerton (as per notice in Ann. & Mag. Nat. Hist., March 1874, p. 121) on each side behind the branchiæ is a fold or groove containing the ovarian fenestræ. There were in this specimen three fenestræ on each side; but according

to Dr. Carpenter the number is variable, Prof. Verrill having counted from four to six in some specimens. These fenestræ in this species are more complicated than in most chitons which I have examined. I have never been able to satisfy myself that there is a true oviduct; and it may be that the ova are dehiscent in the perivisceral cavity, and may be expelled through the fenestræ, as they are through the analogous "oviducts or segmental organs" of brachiopods.

The fact that the ovarian openings are not simple apertures was noticed by me in dissecting chitons in 1869, but I am not aware that attention had been previously called to this fact *in print*. Their position had been previously known; but it is not uniform in all chitons. In some the fenestræ are close to the anus and single on each side; and it has been stated that the ovary of one side is sometimes abortive. This last I have not yet observed in any species which I have dissected.—*Bulletin of the Essex Institute*, vol. vi., Aug. 1874.

"*Boreal and Arctic Shells.*"

We beg to call the attention of our readers to the following communication received from the Secretary to the Smithsonian Institution.

To the Editors of the Annals and Magazine of Natural History.

Smithsonian Institution,
Washington, D. C., March 16, 1875.

Dear Sirs,—Mr. W. H. Dall has been engaged since 1865, under the auspices of the Smithsonian Institution, in prosecuting researches in regard to the marine invertebrates of the region lying between America and Asia, from latitude 50° to latitude 70° N., including the coasts of Russian America, the Aleutian Islands, Behring Sea and Strait, and the Arctic Ocean north of the Strait. He is now occupied in working up his collections at the Institution, with special reference to correlating the species of the Arctic fauna, and their relation to those of both the Atlantic and Pacific seas.

The Smithsonian Institution is desirous of obtaining suitable material for his comparisons, especially from the coasts of Greenland, Spitzbergen, Norway, and Sweden, the northern coast of Russia, and, in general, the boreal seas of Europe. While any and all marine invertebrates will be acceptable, Mr. Dall at present is especially anxious to secure, as soon as possible, all the arctic and boreal species of Tunicates and of Shells, and especially such as contain the animal, either dry (if Gasteropoda) or preferably in alcohol, and for the commoner species large series and from as many different localities as possible.

In return for such contributions the Institution offers a series from Mr. Dall's very extensive collections, which will be supplemented, if necessary, by duplicates from the collections of the U.S. Fish Commission made on the east coast of the United States, and identified by Prof. A. E. Verrill and other collaborateurs of the Commission. Any valuable specimens which may be lent for examination will be carefully preserved, and returned at as early date as possible. Specimens may be sent through any of the European agents of the Smithsonian Institution. Very respectfully,

Joseph Henry, Secretary S. I.